

A recalibration of the Hiroshima data with the correct numbers for beta radiation may show that chemicals like HTO are more dangerous than previously thought, forcing a revision of the NCRP data. Yet no mention is made of this in the EIS.

Point No. 8. The NRC makes no mention of the reliability of the vendors and companies which may eventually carry out the release of this water into the air or river.

Normally it is not that essential that the EIS address this question. However, given the rather unsavory documented history of past deception, some of it conscious and some of it bordering on the criminal, it is not too much to ask the NRC to thoroughly evaluate the reliability of these companies and the role of the utility.

Point No. 9. Not enough attention is paid to the negative effects of river dumping, both commercial and environmental. As an example, consider the fact that 90 percent of the value from Chesapeake fisheries comes from shell fish, a luxury item for many restaurants and hence, highly subject to people's perceptions of how safe it is to eat the shell fish.

The well-publicized dumping of the insecticide Capone and other pollutants in the 1970's in the Chesapeake caused enough negative impressions for the consumer to have a sizeable economic effect on the Chesapeake economy. The adverse effect on the sale of oysters and blue fish is well documented causing an economic loss to the area.

Dumping of TMI waste water into the river could very well have a negative effect on the economy of the area given the fact that much of the economy rests on the luxury items that are highly susceptible to changes in people's tastes.

Point No. 10, and the last point. In summary, I find the present supplement to the EIS is not very valuable from a scientific point of view. The NRC has not done its homework and it's hard to make a reasonable scientific conclusion given the paucity of scientific information contained in the report.

At best, it shows a certain insensitivity and a lackadaisical attitude towards radiation safety and at worst, it shows an inclination to disregard the health and safety of the people in Harrisburg.

That is the presentation of Dr. Michio Kaku. I might have read it too quickly and I hope you were able to all comprehend it.

Since I am not a technical expert, I'm not disposed to answer any questions you may have. But what I will do is make some copies available perhaps at a later date to the Commission because I think Dr. Kaku is a reknown world expert and I think his opinion is much valued.

[Discussion]

ERIC EPSTEIN: I'm just going to make a brief statement because I think I've said all that I really wanted to say at the other meetings. I just hope for a change that somebody from an NRC-affiliated body listens, and that would be a delightful change to past actions of the NRC in the past. I'll just read briefly.

We've gotten so used to being ignored and having NRC-affiliated bodies rule against us that I appear here tonight hoping for once that a decision will be rendered in favor of the residents of Central Pennsylvania.

I feel we must not become so desensitized by the statistics represented by GPU, the NRC, and DOE that we lose perspective of what's at stake. Again, rather than make any more statements or point to GPU's past history of misconduct and misdeeds, I think it's important that you take the time right now to heed the advice of John F. Kennedy when he urged the ending of above-ground nuclear testing.

And I quote: "The number of children and grandchildren with cancer in their bones, with leukemia in their blood or with poison in their lungs might seem statistically small to some in comparison with natural hazards, but this is not a natural hazard and it is not a statistical issue. The loss of even one human life or malformation of one baby who may be born long after we are gone should be of concern to us all. Our children and grandchildren are not merely statistics towards which we can be indifferent."

That concludes my presentation.

ARTHUR MORRIS: Thank you, Eric.
(Applause)

JOEL ROTH: The question I'm about to ask you -- we are the break were trying to come up with some answers and perhaps you could help me on that. As far as numbers of people who you feel are truly concerned with this issue, and I know you said to me tonight that you had received a lot of calls, and I've received some calls, but is there any way you can help us, you know, with just some type of numbers or feeling that you have gotten on the people who are truly concerned?

ERIC EPSTEIN: Well, I really can't give you an accurate number based on the phone calls that I get and the people I talk to. I can tell you that anybody I talk to and have come in contact with is adamantly opposed to dumping the water and evaporating into the river, and I think that attitude stems from their perception of GPU and the NRC as not operating in their best interests.

I don't think faithfully, Joel, I can render you a figure of how many people. I can just tell you that overwhelmingly not one person has said to me that they are in favor of dumping it or evaporating it into the air.

This is the first time since the restart that there has been this much public interest converging on an issue. I mean the phones are ringing off the hook and we are getting letters and requests on the scale that we had at the point of a restart decision. So there is a lot of attention focused.

I think the reason that you may not see numbers like you used to see is because people are apathetic. I mean to some degree the NRC, and I don't know how to say this any more delicately, has screwed them and so has the utility.

(Applause)

I really think you have a unique opportunity to reverse that trend and perhaps show some courage and make the decision that is favorable to the residents of Pennsylvania for a change. That's the only way I can truthfully respond to that question.

JOEL ROTH: Thank you.

ELIZABETH MARSHALL: Mr. Epstein --

NIEL WALD: Can I follow up on that?

ARTHUR MORRIS: Yes. Niel and then Elizabeth.

NIEL WALD: I just wanted to ask whether you detect any public favor for keeping the water on Three Mile Island?

ERIC EPSTEIN: Well, I think a lot of people are comfortable with that idea because, first of all, I think people are tired of being dumped on, and any perception of anything being evaporated or dumped on them was a perception of them being exposed to more radiation, which I think is an accurate perception.

I think there is a feeling from a lot of people that they could deal with the water staying on the island until a safer method of disposal is found.

NIEL WALD: And they would trust GPU to --

ERIC EPSTEIN: I don't think they would trust GPU to do anything, you know, but I think there would be a lot more trust -- let me be frank with you. There would be a lot of trust for them to keep it in the water where it can at least be monitored rather than have them disperse it into the air or dump it into the water. And I think that people are just tired of being dumped on.

I'm not saying that they would trust the NRC or the EPA or the DOE to do it, because I don't think they would. I don't think you can regain the level of trust from this community that you once had before the accident -- ever. I think that's gone.

NIEL WALD: No, I'm just looking at the water problem because I remember there was a lot of objection to Three Mile Island being a waste disposal site.

ERIC EPSTEIN: Yes, I agree, and I've sparred with Tom about this before and I'm not going to get into now, but I think there is that potential in the future that the fuel pools will be utilized in that capacity. But I'm taking other people's time.

ARTHUR MORRIS: One last question.
Elizabeth.

ELIZABETH MARSHALL: Niel asked the question I was going to ask.

ARTHUR MORRIS: Okay. Thank you, Eric.

ERIC EPSTEIN: You're welcome.

BRENDA WITMER: My name is Brenda Witmer. I'm from Lancaster and I'm a member of the Susquehanna Valley Alliance. I will be reading the statement of Carl Johnson who is a medical doctor and Director of the Health Department of South Dakota University. He is also an expert witness in a court case. It was an important case reflecting the health effects of workers at Rocky Flats.

This letter was written on February 21st, 1987.

I have reviewed this draft supplement and wish to make the following comments.

In the Summary on Page v, I note that the disposal volume of accident-generated water was 'expected to be 40,000 to 80,000 cubic feet (11,000 to 13,000 cubic meters)'. I believe that cubic feet have been converted here into square meters and not cubic meters.

In the second paragraph of the Summary, I see that the final processing will involve about 2.1 million gallons, or 7.9 million liters with about 1,000 curies of tritium and smaller amounts of cesium-137 and strontium-90. There is no mention here of uranium, plutonium, or other transuranics nor of other of the 500 different radionuclides of potential importance in the assessment of contamination around nuclear facilities. This is a very serious oversight. I believe that the concentration of all of these should be determined.

The summary estimates that the considered disposal alternatives will have an impact of only zero to .003 radiation-induced cancer deaths in the worker population and only zero to 0.0003 for radiation-induced cancer fatalities in the off-site population.

If this water is really that innocuous, should the plant save it to be used in drinking water fountains for the employees at the plant or should it be carbonated, bottled, and sold in stores as spring water?

As I recall, the reactor core in this plant was partially melted down and this water has been in and around the 100 tons of partially melted uranium with plutonium and other activation and fission products for nearly seven years. Many of these metals and compounds are quite water soluble, especially uranium.

The Schwarzwald Uranium Mine, for example, in Golden, Colorado at times pumps out more than a million gallons of water each day, and in the past and perhaps today also this has been discharged into public water supplies. The water at times contains more than 10,000 picocuries per liter of alpha radiation from the uranium.

The contact there between water and uranium ore has been at rather cool temperatures, not in a superheated environment such as has occurred at TMI-2. I can't believe that there is not a large amount of uranium and its progeny and other transuranics dissolved in this water in TMI-2. And yet, in reading this report I didn't see any mention of alpha radiation levels per liter of water, nor of the concentration of uranium and other transuranics in the water.

In the manuscript there was a discussion of background radiation levels in surface waters downstream and these discussed the levels of alpha radiation and radium in the water amounting to several picocuries per liter. The lack of information in this draft report on the concentration of uranium and transuranics in the waste water is very puzzling.

The range and concentrations of radionuclides in the water should be determined by a number of agencies and independent laboratories and the radiation protection guides should be those developed by the EPA or more conservative independent researchers. For example, the EPA has advised a limit of 10 picocuries per liter of uranium in water in contrast to a limit of 6,000 supported by the Department of Energy.

Further, the units in the book should be consistent with the present EPA practice. After all, this is an environmental impact statement. Radiation activities should be expressed in terms of picocuries per liter of water and picocuries per cubic meter of air. The use of awkward units like microcuries per milliliter and the use of large negative exponents should be avoided since these are confusing even to experts and especially confusing to the public.

In several places the text reads as if the tritium in the water is there as a gas. In fact, tritium (which is hydrogen) oxidizes with oxygen and ozone over time to form tritiated water or heavy water. The evaporation process will simply evaporate off all the tritium as a tritiated vapor which is much more toxic on inhalation or ingestion than is tritium gas. I think that we do not have enough information to make a decision about the disposition of this water. I recommend against any of the methods of disposal at this time until there has been exhaustive analysis of the water by a number of agencies and independent laboratories and universities, including one or two in Canada.

The water should be analyzed also, for example, by the EPA and by the U.S. Geological Survey which does get involved in what happens to water in the environment. I have attached a figure from an EPA report on liquid emissions from a nuclear power plant in normal operation to show the range of radionuclides released in such normal operations.

I think we need to know more about the assumptions made in calculating doses to persons around the plant from the radionuclides which might be released by the various alternatives proposed.

Those dose estimates should also include exposure to every one of the 500 radionuclides of potential importance in this water and should also consider concentrations of radionuclides by marine plants and animals in the food chain.

Sincerely, Carl J. Johnson, M.D.

And here is the little chart that is included.

[Discussion]

FRANCES SKOLNICK: My name is Frances Skolnick. I'm with the Susquehanna Valley Alliance.

Dr. Wald, when you discussed Dr. Stewart's study with Dr. Ernest Sternglass you mentioned that one of the reasons you questioned its credibility was because the data had been collected from pregnant women and you didn't think they could remember, and I find that really insulting to women.

(Applause)

You know, life is really precious, and I believe that that is not an emotional statement. I believe that that is a fact of life. It's so precious indeed that it's really worth working to preserve it and even fighting to improve its quality.

It is our responsibility to work to improve the quality of our lives. I think that this is an endeavor which this panel and the public are embarking upon tonight.

In central Pennsylvania we have been the victims of not only the releases of radioactivity, but also a huge propaganda machine which insists that radiation is not harmful to our health.

GPU Nuclear has an extensive public relations outfit which has set about to convince the public in this area that this water is really almost quite pure and that no matter how it is disposed or, whether it's into the air we breathe or into the water we drink we will not be harmed.

They are wrong. This water is radioactive. We are a population already impacted upon. We need no more exposure from Three Mile Island.

(Applause)

We refuse to select evaporation as a choice. When we are told that we can drink or breathe this radioactivity we feel like prisoners within our own environment.

The truth is there are other alternatives, alternatives which would contain the radioactivity. Only those are acceptable.

(Applause)

This isn't just a political issue as some people think. Rather, it's a life and death situation. We are talking about the quality of our lives. We and not GPU Nuclear or the NRC must take responsibility to make these decisions about the quality of our own lives and those of our children. We cannot be cautious enough when making decisions about the release of radioactivity.

Ladies and gentlemen of the panel I urge you to be cautious. I urge you to preserve the quality of our environment to the extent that we are able. I urge you to remember that statistics are numbers and that numbers belong to faces - a young face, an old face, yours and mine.

I urge you to take our message with yours to the NRC that we will not tolerate the evaporation of radioactive waste into our environment.

Thank you.

(Applause)

ARTHUR MORRIS: Ms. Davenport.

NIEL WALD: Mr. Chairman, will you accept a comment or is that out of order?

ARTHUR MORRIS: Go ahead, please if it's brief. Go ahead, Niel.

NIEL WALD: In defense of pregnant women, I was trying to convey without taking enough time to say it that Dr. Stewart's study was a retrospective one in which inquired of these mothers long after the child -- the homes of children who had died anywhere up to 10 years before were visited. So it was a matter of recall of whether it was two films or three films 10 years before, and I think that's a difficult feat for anyone to recall.
[Discussion]

DEBRA DAVENPORT: I just have a few questions and also a few statements of opinion again.

I still don't want the accident water discharged into the river or evaporated into the air.

I also feel that I would like to see it go to Nevada, but I can see that public opinion very strongly favors keeping that water on the island for now.

I feel that the burden has been placed on this population from any emanations from Three Mile Island has been so extensive and so damaging and so tragic that anything else added to this would cause a great loss of life. I also feel that it would add greatly to area grief.

I do question some things about this water. I know that when we were in Annapolis over a year ago listening to an advisory panel meeting there, there was some discussion over the original curies of tritiated water that had been present at the time the accident completed, whenever that was.

What had happened is that apparently we had lost some 700 curies through evaporation. I find that all correspondence that I've gone through shows estimates of tritium to be up at 3,700 curies. Now I find that maybe we are just going to evaporate 1,000 curies and I would hope that the water, should it stay in tanks on the island, would not evaporate excessively, but if it does and it seems to be doing that very well, I don't see why we really need an evaporator which costs \$6 to \$12 million to evaporate the water.

I feel that it is much better to leave it in tanks, but to truly leave it there.

I also have some questions about whether, and I'm not really an engineer and that's obvious but whether in the engineering sense, the evaporator would work because it is a very large machine and it hooks through the regular evaporating systems once the vapor goes out, from what I understand.

Also, radionuclides and particulate would at least to one percent go past the filters and go out into the environment. Because of this, I'm totally opposed to it, but I'm also wondering, and I would like to ask the NRC, are there any other places in the country that have an evaporator of this size and what sort of operation are they running and what do they use it for.

[Discussion]

Thank you.

I still do have grave questions. I feel that perhaps a machine this large couldn't work over a long period of time and I'm afraid that it wouldn't be temporary and that it might be applied for some other use.

I don't think that necessarily once this accident water would be 'evaporated' that would be all the evaporator would be used for, and I am very, very opposed to any other use for that.

[Discussion]

BETTY TOMPKINS: My name is Betty Tompkins. I just have one observation and perhaps a brief statement.

My observation came from listening to panel members this evening, and I would ask you to very carefully rethink your role. In some cases I thought the panel came across as an adversary and I think at least three

panel members seemed to think or the way the questions came across that your main function was to educate the public.

I don't see your role as that. I could be wrong. But my question again is to ask you to very carefully, and this is a very serious matter that we're dealing with, and we are talking about lives of people, to really define for your own information your role.

Ms. Trunk has left I see. I wanted to say to her that people always say not in my backyard -- not in my backyard. But if it's moved from the island, it has to go in somebody's backyard.

So I would urge the panel, and there is a moral imperative here I believe, to think very carefully about the health and safety of we people in central Pennsylvania. It has been said in the past that each generation is responsible for its own time. We are responsible for this time in which we live and we have a responsibility to future generations. We are dealing here, however, scientifically we might think we are, and however much knowledge we might think we have gained over the eight years, and some of us feel that we've gone to college and not gotten any credits, but we are dealing with a lot of unknowns here that will affect the lives of our children and our grandchildren.

I would urge you to vote to keep the water on the island and not to evaporate it.

(At this point in the proceedings Ms. Trunk rejoined the panel.)

May I just say to you, Ms. Anne Trunk, that I heard you say a little while ago that you didn't want it in your backyard. Nobody wants it in their backyard, and if it is not in your backyard and it is moved from the island, it will be in somebody else's backyard with children.

So I would urge you, ma'am, to vote to keep it on the island.

I thank you for your attention.

(Applause)

ANNE TRUNK: Could I make a comment? When this panel started, at one of the first meetings, everybody wanted that water off that island, and everybody from Middletown. So what I'm saying now is just what I remember hearing from you at that point in time.

BETTY TOMPKINS: Ma'am, if you're speaking to me, may I just respond?

ARTHUR MORRIS: Very, very briefly because the idea is not to go back and forth. You had your comment and Ms. Trunk had hers. We can go back and forth on this. Very quickly.

BETTY TOMPKINS: I won't go back and forth. You never heard it from me, ma'am, about evaporating the water or moving it from the island. I have never said that. So I don't want to go back and forth.

I'll just respond while I'm here as to whether people are calling now to make comments about what should happen at Three Mile Island.

You know, I was born in England and I can say this. American people really don't take their freedom that seriously when it comes to speaking out or making decisions, and a lot of American people seem to say, well, you can't fight City Hall or you can't fight the government.

So over these eight years people have said to me keep going but, you know, you can't win because you can't fight City Hall. There are people that are very concerned about this, but they don't speak out.
(Applause)

JANE LEE: I'll only take a couple of minutes of your time. I really regard this as an effort in futility, but in view of the seriousness of the proposals that have been made, I just feel that I have to come here. Incidentally, I called a lot of people that I know that are very concerned about Three Mile Island. They are so angry that they can't even talk, much less attend a meeting. They don't trust themselves to attend any meetings or any sessions any more on TMI.

But it seems to me there is a genie in the proposition of creating a nuclear storage site on TMI, and the genie is how long will GPU be able to contain the genie in the storage canisters that will be stored on site?

First GPU was going to clean up the accident. Now we are presented with options which are not really options at all, but rather the less of three evils. How shall we keep the genie in the bottle?

I object to any of the proposals that were made for disposition of the water. I object to boiling it off and sending it into the atmosphere. I object to dumping it in the Susquehanna River and I object to storage on site because I know the performance, the past performance of GPU which is highly unreliable and which has had several leaks in their storage tanks on site.

Any additional releases in this area on this population just heaps additional biological insult to the body. You haven't seen enough evidence yet? Well just go ahead and do this.

And, incidentally, how many people on this board, and I really shouldn't address these questions to you because I don't really blame you for this predicament.

The NRC doesn't live in this area and they plain don't give a damn what happens to us.

(Applause)

And I get the strong feeling that a lot of the members on the board do not either. Some of them don't live in the area and some have saw fit to move their children at far distances out of the area, and I find that highly objectionable.

When the NRC's own rules meet with circumstances which did not exist when the original rules were made, they simply changed the rules. Now don't you remember that they were going to clean up the site and they were going to ship the stuff out and that Three Mile Island couldn't be a storage waste site? It isn't licensed to be a waste storage site, and how dare you store this stuff on that island. How dare you even consider venting this into the atmosphere or dumping it into the drinking water. What kind of people would do this to innocent people? What have we become when we see people in the same room arguing about what we are going to do with this mess when, in either case, they were not responsible for the original mess?

The responsibility for cleaning up that island rests with the people who created the mess through the falsification of leak rates which brought

about an accident, and that is the bottom line. They are responsible. And, by the way, I want my name on this. My name is Jane Lee. I wouldn't change places with you people on a bet because you're getting all the static and you're getting all the hostility. I could just weep at what I have seen that has happened to this country. I could weep. I'm 62 years old and I never thought I would live to see the day when my country was just plain going to hell.
(Applause)
Thank you.

TOM BAILEY: My name is Tom Bailey and I'm an attorney here in Dauphin County. I just have a few comments to make to the panel. I realize that we've been through a long evening and I certainly can't understand all the science that has gone before and I don't pretend to. I would [like] to enter my comments in two words. One is addition and the second is responsibility.
The addition. My perspective is that any addition, meaning additional exposure to radiation is totally out of the question, and I begin with that as a premise that I've seen Bill Travers' presentation rationalizing this EIS. I was at the Lancaster meeting in late January and I saw the presentation, and I had seen it once before.
The presentation that we saw was by a corporation which has direct government support, and you have to see it as a private enterprise for what it is. A private enterprise in this country does not have the right to jeopardize the life and welfare of the people who live in the area. I mean that is the basis.
But the problem is that it is not just the private enterprise - it's the government. If you want to see it as a shamrock or cover, you've got the GPU, you've got the private enterprise and the government is on their side on these issues. The third petal is the public. That's not the way it should be. The third petal should have as much power because the government is to be looking out for the public welfare. That's what it says when you go into the Law Library here in the state, the public welfare.
The public welfare will not be served by any additional exposure.
The second is responsibility. On nuclear plants, the law is very clear on this - federal preemption. The federal preemption is the Nuclear Regulatory Commission. Those are the people you will address and you will speak to. And, again, the word is responsibility. You people are the responsible party to gather public input about this area as to what their feelings are on this issue, and if you aren't sensitive to it, then your whole function has failed.
The responsibility is there. As the woman said before, it's a tough position to be in, but you're there now and you have the responsibility to carry through what you've heard here and tell the people that have the ultimate say that, no central PA does not want any more exposure.
(Applause)
All I would like to say is the burden of proof is on the NRC to prove that these methods of disposal are -- what can you say, they are the best that they can do.

It says in the very beginning of the EIS that none of these alternatives is clearly preferable. Your response should be to the NRC - prove it to us which one is best. It's not my burden to prove to them. They are the ones that are trying to expose it to me. That's the way it is in law, you have a burden of proof, and the burden of proof is on the NRC and they have not met it.

My last comment would be that this is a very new area of the law and you people are on the forefront of setting policy for nuclear responsibility mainly because you're a citizens group. What you do has precedential value that will go for generations.

I wish that you would consult the law and know what it is when you consult the NRC.

Thank you.

(Applause)

ARTHUR MORRIS: Was there another person that wanted an opportunity to comment?

JOYCE CORRADI: My name is Joyce Corradi. I represent Concerned Mothers and Women.

I have a deposition that I will pass out to you after I read a small portion of it.

This is the United States of America, Nuclear Regulatory Commission before the Presiding Board in the Matter of Inquiring into the Three Mile Island Unit 2 Leak Rate Data Falsification.

In a Memorandum of Law filed January 23rd of this year, the numerous employees stated that the administrative and surveillance procedures established by Metropolitan Edison at TMI-2 to fulfill the technical specifications for licensing and operation of the facility were not binding legal requirements of the employees.

I will hand you the rest of that data in a minute.

Now the point must be made clear. This memorandum makes profoundly clear that the employees do not consider themselves bound by the law governing the nuclear facility's license to operate. The question thusly arises how did the employees' attitude toward the NRC's regulations develop, how far up the management ladder does the responsibility for this attitude go, and if management is not responsible, why would this attitude remain with the employees?

Whatever decision is made on this disposal of water, the workers must do the disposing. With the above questions raised, how can you or anyone sitting at this panel be assured that procedures will be followed and safety ensured?

We are again putting the cart before the horse. No matter what is done, the safety of the citizens is at risk. Concerned Mothers and Women find this situation intolerable and want to know what this panel is planning to do about the situation.

In conclusion, I request the NRC staff to show good cause that what I am saying to telling this panel is not a public health and safety hazard.

Thank you.

(Applause)

ARTHUR MORRIS: This gentleman here and then this gentleman will be the last person to come forward.

AL MANIX: My name is Al Manix, Middletown.

I am really dismayed with all the education I see in this room. If you went to buy an automobile, you would give me a better presentation than these people are giving you tonight.

For instance, this device that is going to hurl this water -- certainly the manufacturer has specifications. He will tell you what it will do and what it will not do, how it will do it and what you can't do with it. I haven't heard that.

What are you buying here? What is your interest? Just to set a device out there, any kind? Will you put fans on it or an airplane engine or some damn thing? What are you really buying and what will it really do? How high are you going to put it, throw water up a hundred feet and then let it fall on the ground and go down to the bay or into your drinking water?

These are questions you should be asking. I shouldn't have to ask these questions. You should be sitting here and saying, hey, hold it, we want to know whether it's right or whether it's wrong, and you are not addressing that to me.

So let's find out what this device will do. Who makes it and what will it do and where will the water go? I think there are questions that you should address to these people. We're not dummies.

Thank you.

(Applause)

[Discussion]

FRANK DAVIS: Thank you. My name is Frank Davis.

I'm troubled that we haven't given Ms. Trunk a better answer tonight, those of us who say we are opposed to evaporation of the water or to dumping it into the river.

I will admit that Ms. Trunk probably has heard me say in past years that I was opposed to making Three Mile Island a nuclear waste dump.

What I think in my mind makes a difference now is that even given the GPU record, I think that the water can be stored more safely on the island than it can be unsafely evaporated into the air. And I think that your children will receive less radiation during the years ahead if the water is kept in those stainless steel tanks than if it is deliberately evaporated into the air.

I think that is what changed my mind about keeping the water in the tanks.

Thank you very much.

(Applause)

[Discussion]

ARTHUR MORRIS: Thank you very much.

At this time, I would like to turn to the panel for a discussion, and the first item, unless the panel feels differently, the first item that we said we would attempt to address this evening was the EIS.

THOMAS SMITHGALL: Bill, the first question I had, and you've been taken to task on your EIS here tonight calling it sloppy and hastily prepared, is why in the initial EIS draft, why wasn't there more detailed information on the inventory? Why did you just take an overview of it instead of inventorying it, and it took from December of '86 until the end of February before that was even available, at least from where I sit.

[Discussion]

You mean you didn't have that information at the time you issued the initial draft?

[Discussion]

I guess again I've got to question the process. The initial draft is out in December of '86. It comes up to the deadline time for the comment period and then you get the final information, and if it wasn't for the 45-day extension we wouldn't even have an opportunity to even comment on the full inventory of what was there.

[Discussion]

FREDERICK RICE: Bill, is there any pending legislation for low-level waste sites in Pennsylvania or Maryland close by that would reduce the risk of shipment?

THOMAS SMITHGALL: I would like to ask one on that one because it was one of my questions as well. When you reviewed your alternatives for offsite dispersal, was that taken into consideration that you could couple two alternatives of storage on site until there was a closer low-level site as opposed to using shipment to 2,000 miles away?

[Discussion]

And the number of truck accidents is a conservative estimate in itself.

WILLIAM TRAVERS: Yes, it is, in our view.

THOMAS SMITHGALL: So that being the major non-radiological impact is insignificant.

[Discussion]

ARTHUR MORRIS: Anne.

ANNE TRUNK: I just wanted to ask, Tom, if we buried it on site and we wait for Pennsylvania to get a site, how long do we have to wait for it?

(Laughter)

THOMAS SMITHGALL: I would like to hear this answer.

THOMAS GERUSKY: First of all, it wouldn't be buried on site. It would be stored on site in tanks until a decision was made at that point to solidify it. Under the Pennsylvania draft proposal there would be no allowance for liquid disposal at the low-level waste site in Pennsylvania. So it would have to be solidified and meet all kinds of special requirements which - I don't know. I'm not sure that because of boron whether it could easily meet the requirements for the site. There may be some other problems associated with it besides radioactivity.

Your guess is as good as mine as to when we are going to have a low-level waste site. We are supposed to have one by 1993. The legislative process hasn't really started on the implementing legislation yet. So I don't know how long it's going to take.

ARTHUR MORRIS: Niel, I think you had a question or a comment.

NIEL WALD: Yes. I have trouble in understanding the EIS. Given the Table 5.1 which lists the various alternatives and the doses that are associated with them and the costs and the space and so on, I'm having a little trouble with that because it seems with this much information that one might be able to make some choices. Can you explain that opening statement?

[Discussion]

For the 3.5.1 which has zeros in almost every category of cost whether it's dose or accident or dollars, the consideration there, am I correct that the consideration there was that was sort of outside the ground rules of the NRC to allow that?

[Discussion]

Thank you.

FREDERICK RICE: Bill, did I understand Tom to say that we would not be able to store on site solidified?

THOMAS GERUSKY: No, I said it wouldn't be buried on site. It could be stored on site solidified, but I wouldn't suggest that until you know what the requirements for the disposal site are because you couldn't change it then.

FREDERICK RICE: In his proposal he says on site solidification and burial, and then --

THOMAS GERUSKY: It was burial at another location and not in Pennsylvania.
[Discussion]

JOSEPH DiNUNNO: You may have been in receipt of a letter or a note that I sent. I was really raising a question on the ocean dumping alternative largely because I thought some of the statements that were made in the impact statement were not exactly correct, and I wondered if you had addressed that and would you comment on it.
As I indicated, I'm not suggesting that I looked at that and declared that a viable option, but I thought the statements there were misleading and needed to be corrected.

[Discussion]

My only concern and the reason for flagging this is I find it confusing to all and particularly to the public when we say it's perfectly all right to dump this into the Susquehanna River, but the same Federal Government is saying but don't put it in the ocean.
Now that's a contradiction that confuses some of us.

WILLIAM TRAVERS: There are many of those, and the reason -- I'll just restate the reason we didn't consider it further was not on a technical basis but more on an administrative --

JOSEPH DiNUNNO: I understand and I think it's important to bring that out.

WILLIAM TRAVERS: As a matter of fact, I would say without having done the calculations that if we were to do them given the source term involved in this water that there would be no significant environmental impact associated with dumping the entire water --

JOSEPH DiNUNNO: Well, I would think it would be much less than putting it in the Susquehanna River except for the transportation problem which you haven't addressed because obviously you have to transport it to a place where you could accomplish that. But it was making sure that you clarified your position so that you don't imply that that wouldn't be a safe thing to do.

ARTHUR MORRIS: Tom.

THOMAS SMITHGALL: By not giving any okay to any specific alternative, haven't you tacitly given the okay for evaporation? S

[Discussion] str

So when it's all said and done here, Bill, and let's cut through all that, and when it's all said and done and you're ready to send your recommendation up to the Commission it's going to be evaporated.

[Discussion]

Well, I just wonder what we're all going here quite honestly. I mean are we playing a little game here?

(Applause)

Are we going to have any impact on what is actually going to be sent from the staff or [are] we just going to be part of a document that is then going to gather dust after you've done the process that you're going to allow happen anyway? That's my problem with this whole process, Bill. I know you're going to collect our comments, but then you're going to send up the proposal that is already on the table by the licensee, and it appears, regardless of the law and regardless of what you say, it appears that the decision has been made by you've tacitly given an okay because you've said all the alternatives are acceptable. You haven't even prioritized them other than the fact that you give ranges of costs and ranges of doses.

[Discussion]

I'm not going to change his point of view on it. I'm asking about the process and we have people ask about the process here that are concerned about it. We're sort of taking the heat here, and I want it understood where we are on this. Are we just going to go through the exercise or is this going to be heard? Are the concerns of the people here going to be heard? If it's a 12 to nothing vote or a 6 to 5 vote, what kind of an effect is that going to have on the final outcome?

WILLIAM TRAVERS: I think it's important, and you know it better than I, that the panel was formed by the Commissioners. They don't advise the staff. We come to provide as much information as we possibly can to you and you advise the Commission. I don't know how much more clear I can be on the process.

ARTHUR MORRIS: Quite frankly, that's what we need to make a determination on tonight at this time. We need to make a determination whether we have concerns about the EIS that have not been addressed or whether there is support for it or whether there is no comment on it from the panel, or a combination of the above.

I understand what Tom is expressing here, but beyond that the panel I feel has to at least address it in some fashion and it may choose to address it by telling the Commission that we have no comment. That I'm sure is possible.

THOMAS SMITHGALL: Let me just sum it up and then I'll leave it after this.

ARTHUR MORRIS: I think that comes under the next discussion.

THOMAS SMITHGALL: No, I think it's important to hear about the EIS and it's the process that's being done. We are probably on uncharted waters any way with an environmental impact statement on a license amendment. Maybe I'm wrong in the process here.

WILLIAM TRAVERS: It's probably relatively rare, you're probably right.

THOMAS SMITHGALL: Okay. So, my point is you've taken 10 alternatives and said none of them are preferable over the other, and the licensee six months earlier has put one on the table that in essence you've said is okay. I mean how do you not say no to that? How could you not say no to that? Even though you go through the motions and you go through the law, you get to the same answer.

WILLIAM TRAVERS: That's what I have to do. If I don't do it, I'm going to be called to question for it and I should be, and that's what I'm going to do.

THOMAS SMITHGALL: Talk to the people out here and ask them whether or not they feel the decision has already been made or not.

ARTHUR MORRIS: We're involved in a discussion here that involves a staff responsibility and a separate one that involves a Commission responsibility. The staff under law is required to look and consider things under certain regulations, which they are telling us they have indeed done. When they consider the regulations and their guidelines, they look at the options and within certain parameters they feel that they are comparable.

You may disagree with that as an individual, but they are saying from a technical staff point that is their comment.

THOMAS SMITHGALL: Fine.

ARTHUR MORRIS: What I hear Bill saying is the Commissioners can consider other types of things, but staff should not do that.
I understand again the frustration Tom's offering and I think that will come with whatever the Commission ends up doing with what this panel would recommend.

THOMAS SMITHGALL: Will you finally make a recommendation to the Commission?

WILLIAM TRAVERS: I intend to make a recommendation, and I've said that many times.

ARTHUR MORRIS: We've been told that on numerous occasions that you would at some point make a recommendation.

JOSEPH DiNUNNO: Isn't it true, however, that the Commission is restrained as to the conditions under which they also make a determination without a public health and safety problem and without an environmental impact? These are the two laws under which they are acting.

WILLIAM TRAVERS: That's a good question and I've asked that same one.

JOSEPH DiNUNNO: So if there is no impact and if there is no public health and safety, then do they have any option but to approve the proposal that has been put on before them?

WILLIAM TRAVERS: Do they have the option? I think they do. I'm not a lawyer, but I'll tell you what I think. There is language in the regulations that implement the Atomic Energy Act which speak to the public interests and it's a rather vague term, but I think based on that fact there is some latitude on what the Commission can and can't do.

JOSEPH DiNUNNO: I think that is what Tom is struggling with. We will be presenting the views as we've heard here in the last few days, but are they for naught because they could not confirm that there is an impact and they cannot confirm that there is a public health and safety problem. So are we whistling in the wind?

WILLIAM TRAVERS: I don't think that's what I heard, but I think the answer to that is the Commission does have discretion. They don't have to take what we say certainly.

ARTHUR MORRIS: Does anybody on the panel at this point want to offer comments or suggestions on a course of action that the panel should take regarding the EIS?
Yes, Mr. Rice.

FREDERICK RICE: Well, as a County Chairman of Dauphin County and also as a member of the panel I have to wear two hats. I do not believe that we've reached a comfort zone for the action of the evaporation, nor have we had

guarantees of 100 percent safety for our citizens.
Therefore, I cannot support the evaporation.

ARTHUR MORRIS: Fred, excuse me, are you going to speak first to the EIS?
That's what's before us.

FREDERICK RICE: I accept that.

ARTHUR MORRIS: Okay.

FREDERICK RICE: Except for one point.

ARTHUR MORRIS: I guess I'm trying to get a flavor, and maybe the wrong way to do it is the way I'm suggesting we do it.
Niel, go ahead.

NIEL WALD: Why don't you define the second step so that we all know, because that may be where Fred's comment comes in.

ARTHUR MORRIS: Okay. There are two steps that I mentioned at the last meeting and again tonight.
One is that there is a document that has been completed here as a draft called the Environmental Impact Statement that contains several alternatives that they have commented on. I would like us to offer some comment on that, whatever it is.
Then the next step after that, there is a specific proposal by GPU on the evaporation alternative, and I would to, as a separate item, after we have taken action on this, speak to that issue and say, one, are we supportive, two, are we not supportive and I mean try to generate some position on that so that we can speak to the general parameters of the EIS and the specific recommendation of evaporation.
That's what I'm trying to us to at least accomplish tonight in some way, shape or form.

FREDERICK RICE: All right, I'll comment on the EIS.

ARTHUR MORRIS: That's what I thought you were jumping ahead on, Fred. I'm just trying to keep us on track here.
If anybody disagrees with the procedure, let me know, but we've got to try to -- at least I would like somebody to offer a comment or a suggestion on the EIS at this point.

FREDERICK RICE: Well, I think it's very acceptable to me, except for the low-level disposal sites that possibly could be here in the East close-by. That could have been included, and other than that I accept it.
That's my comment.

ARTHUR MORRIS: Okay. Is anybody in a position who would like to make a specific motion on it to get it on the floor so that we can then discuss that particular motion and either agree with it or disagree with it.

(Pause)

Do you want to take a break and draft up some words or what?

(Laughter)

(Pause for off-the-record discussion among the panel members)

Are you going to put this in the form of a motion, Fred?

FREDERICK RICE: Yes. I would make a motion that it's an acceptable environmental impact statement with the exception that it should have included a low-level waste disposal site, a deposal site in the East, a study of that.

ARTHUR MORRIS: Okay. It's been moved that we state that this is an acceptable EIS with the proviso that they should have looked at closer disposal sites?

FREDERICK RICE: Yes.

ARTHUR MORRIS: Is that what you're saying?

FREDERICK RICE: Yes, low level and close.

NIEL WALD: Can I ask a question for clarification?

ARTHUR MORRIS: Yes.

NIEL WALD: By closer disposal site, are you suggesting that they should have considered the possibility of storage pending disposal sites in Pennsylvania?

FREDERICK RICE: Yes.

ARTHUR MORRIS: Do we have a second to that motion?

MICHAEL MASNIK: Could you restate the motion?

ARTHUR MORRIS: The motion as I understand it is that we as a panel state to the NRC Commissioners that we find this to be an acceptable environmental impact statement with the condition that we felt that the EIS should have dealt with possible options of a low-level waste disposal at sites within Pennsylvania. Realizing that they are not now in place, but it should have at least considered the potential for those sites at some point in the future. That's what I hear I think he said.
But I haven't heard a second to the motion.

JOHN LEUTZELSCHWAB: I second it.

ARTHUR MORRIS: It has been seconded. So it's before us for debate or discussion.

JOSEPH DiNUNNO: I have a question of the proposer over there. I'm having some trouble seeing where that would take you other than the transportation statistics. Will it change anything?
What are you trying to achieve by that? I guess I don't understand.

THOMAS SMITHGALL: I see it as two parts. I think what Fred is trying to get on the table is whether we feel this is an acceptable EIS period. He wants to have some additional information and comment on that that it take into consideration the possible future disposal of this water, either solid or however, within a shorter distance, such that the traffic fatalities would be less.
So I think there are two parts to that. So I have a problem of voting either way on that one because it's got a yes and no to it. I would rather break it out.
Art, I think what you're trying to get at is whether we feel it's an acceptable EIS, am I not correct? Is that what we are trying to get to here on this?

ARTHUR MORRIS: I'm trying to get to that, but there may be conditions that make it acceptable to people, and then if that's the case, then they can add those conditions, and that's why they voted for it with those conditions.

I would suggest, however, in order to make it easier for us that it may be better for us to consider the conditions first and vote on them and then vote with them attached to the acceptability of the EIS.

We've had one condition that has been suggested here. It may be easier for us to vote on those conditions up or down as they come forward in order for us to get to the issue.

Does anybody have a comment at least on the condition that has been added to this?

Tom, maybe you want to offer a comment and speak to it, or not speak to it?

(Laughter)

THOMAS GERUSKY: No, I don't have any comment. I wouldn't know what to say. I mean the issue -- I don't think it's important from the standpoint of the impacts at all. I think it's important from the standpoint of what's done with the water on the island, and there is a little bit of difference between that and the impacts.

I think the environmental impact statement, even though it has raised a lot of concerns and debate about biological facts and about offsite doses and so forth, and about the actual water, the contents of the water, in the context in which the NRC had to put this thing together, I can't find fault with it as a document.

I'm very concerned though about what our role is going to be in the actual license application review process which I think is much more critical to the issue because we don't have enough facts to make that decision yet, and I don't see those facts coming out shortly.

We still don't know what kind of a facility they are planning. I mean it's a very very general proposal that's been submitted and that's what my concern is. Here we're talking about a generic or almost -- it's

something we've asked for for a long time and they finally came up with about the same time that GPU proposed to dispose of it in a specific way. None of the options are bad.

[Discussion]

But will the -- excuse me -- will the license application by GPU provide that information? If not, I think the license application, the amendment that is going to be required, or their proposal, I think the system is faulty if it doesn't contain that.

WILLIAM TRAVERS: Why is that?

THOMAS GERUSKY: Because there should be a public document about exactly what they are going to do.

[Discussion]

But a tech spec change is going to be required.

WILLIAM TRAVERS: That's correct.

THOMAS GERUSKY: So they have to submit a proposal for a tech spec change.

WILLIAM TRAVERS: And that's been done and you have a copy of it.

THOMAS GERUSKY: But it's not detailed enough. I don't know how you can react to that. That's my concern.

WILLIAM TRAVERS: What conditional detail do you think --

THOMAS GERUSKY: You don't even know what the final design of the system is.

WILLIAM TRAVERS: We've scoped out an evaporation process, among a number of alternatives.

THOMAS GERUSKY: What are we talking about? We're not talking about this now. We're talking about the license, the actual change in the license. This is a separate document. This is to look at the generic disposal of that water on the island.

Now they come in with a license application for a specific proposal and what do you do?

WILLIAM TRAVERS: No, that's not what has happened if you take a look at the proposal.

THOMAS GERUSKY: All right. They've come in and asked that the restriction be lifted and they do propose a specific proposal as part of the package.

WILLIAM TRAVERS: No. What has been proposed is to remove a prohibition that currently stands in the license that you cannot dispose by any means the processed water. The package merely says that given the radionuclide content of the water, that prohibition should not bind us. It references their proposal for an evaporator process and you've got that as well, but it doesn't give you the details of the system. It merely gives you the

assumptions under which they've run in estimating the releases of effluents, and in fact it's the same set of assumptions that we've used in our environmental impact statement.

THOMAS GERUSKY: But they do not have an evaporation system on the island now.

WILLIAM TRAVERS: That's correct.

THOMAS GERUSKY: So there is a significant change in their waste treatment process. They don't have to submit any additional proposals formally to the Commission.

WILLIAM TRAVERS: They have to submit a safety evaluation report.

THOMAS GERUSKY: And procedures, and that's a public document which will be reviewed prior to your decision on this?

WILLIAM TRAVERS: Yes. Maybe I'm not following you, but it is not in connection with the formal licensing amendment process. That's the difference. The license that GPU has is probably as unique as any you'll find, and this particular statement that is contained in their license is probably the strangest thing you'll ever see in a license.

It was put in place when the Commission said, when we issued our 1981 PEIS, that we reserve the right for the Commission to approve some disposal technique. So the staff noting that the Commission issued this policy statement went into the license that said you cannot by license condition dispose of accident generated water.

Now you might think that once the Commission approves some method of disposal that that would go away. It doesn't, unfortunately.

ARTHUR MORRIS: Bill, please. We're discussing the EIS first, and we've gone back into -- I mean I think the question really is when we get to the evaporation option, the question is is there an opportunity for the public and other people to comment on the specific kind of equipment that will be used.

I'm not looking for an answer now.

WILLIAM TRAVERS: Okay, fine.

ARTHUR MORRIS: And what is the tool that would be used for that opportunity, if indeed it exists.

Now in order to try to simplify this a little bit, Tom Smithgall suggested before and I disagreed with him, but I think he's absolutely right, I think what we should have before us, and I hope that Fred and the mover would agree to allow this to happen, is we should have before us a motion that the EIS is acceptable period.

Then if he wants to add a condition on that, we can vote up or down on the condition, and I think we're going to make a lot of more sense out of this.

So if the mover and the seconder would agree to that position.

FREDERICK RICE: I agree.

JOHN LEUTZELSCHWAB: (Nodding affirmatively.)

ARTHUR MORRIS: Then what we have before us is a motion that says that the EIS is acceptable, is an acceptable EIS.

Now if somebody wants to try to amend that, then please make a motion and we'll get a second and then we will vote up or down on the amendment, and then we'll move for a vote on the question of whether it's acceptable or not to the panel.

Elizabeth.

ELIZABETH MARSHALL: I don't have an amendment, but I do have a question. During the testimony that we received tonight there was a letter from it sounded like Dr. Kaku commenting on the environmental impact statement, and he commented on it rather negatively.

ARTHUR MORRIS: He said that there were omissions, that there were discrepancies and there was sloppiness. I wondered if anyone on the panel had that impression, and many of you deal with environmental impact statements more than I do, or if you, Mr. Travers, had any reaction to that criticism.

[Discussion]

Is there a member of the panel who reacted to that in any particular way? How about you, Tom?

(Laughter)

THOMAS GERUSKY: Oh, I think anybody can be critical of a lot of the portions of the document, but I think when you look at it in the terms that it was proposed and in comparison to other environmental impact statements that we have seen, this is a good one. I mean it looked at as many options as possible and they followed their procedures.

The couple of items which, unfortunately, they can't take into consideration really are public sentiment and other impacts other than radiation impacts and that they can't do. So it's kind of a limited document itself.

JOSEPH DiNUNNO: And I can comment on that also. I've prepared a lot of these in my time, and I looked at this and I considered it as sort of a bounding document.

ELIZABETH MARSHALL: A what?

JOSEPH DiNUNNO: What is called in business a bounding document. You develop parameters and assumptions that give you the outer bounds of what you would expect, and that allows for uncertainty in the assumptions that you make.

For example, a one percent carryover of water as you evaporate that off, that was an assumption that is made and it gives you a term that you can deal with. Dr. Travers doesn't know whether that is 1 percent or 1.2 percent or 5/10th of a percent. Those specifications still have to

be developed. But that gives you a number that you can work with that really bounds the results that you get. So it's a bounding type calculation. It's very conservative and very reasonable in that sense.

WILLIAM TRAVERS: I think one percent is probably conservative based on what we know about evaporation.

JOSEPH DiNUNNO: That's the point I wanted to make.

ARTHUR MORRIS: Does any other panel member have a comment on the motion that is before us at this time?

(No response)

Hearing none, I'm going to indicate what the motion is and then ask you to vote up or down on it.

Basically the motion is that we tell the Commissioners, and I assume in a letter from the Chairman, that we feel that the environmental impact statement is an acceptable document.

All those in favor of that motion signify by saying Aye.

(Chorus of Ayes)

Opposed.

(Chorus of Noes)

Does anybody want a specific tally of the Yeas and Nays? Does any panel member want to see a tally of it specifically?

FREDERICK RICE: Aye.

ARTHUR MORRIS: You do?

FREDERICK RICE: (Nodding affirmatively)

ARTHUR MORRIS: Okay. All of those in favor of the motion please signify by raising one of your hands.

(Show of hands)

All those opposed so do it.

(Show of hands)

(Applause)

I assume that the public is clapping in response to the approval of the EIS by a count of eight to two.

Let the record show that I'm joking when I say that, but that's what one would expect if you're clapping for the motion. But it was an eight to two vote in favor of the motion.

The second item that we have before us again is the specific option of evaporation put forward by GPU, and I sense that that is the one that probably people are particularly sitting on the edges of their chairs to get the panel's reaction on it.

Again, I'm open for a motion on that. Again it can be a motion to approve it or deny it or to suggest no comment which I would hope we would not do, that we would at least take a position Yea or Nay on it for whatever reason you want to.

So I would look for at least some form of a motion to put it before us.

FREDERICK RICE: I make a motion that we disapprove it.

ARTHUR MORRIS: You make a motion that we recommend to the NRC that they not approve the evaporation option?

FREDERICK RICE: Correct.

THOMAS SMITHGALL: Second.

ARTHUR MORRIS: We have a second to that motion.

Comment on the motion?

(No response)

FREDERICK RICE: Can we give our alternative after the vote?

ARTHUR MORRIS: I think it would be in the public's interest to hear your comment at this time on what your position is quite frankly. If you are opposed to it I think maybe you have some responsibility as a panel member to state why you're opposed to it and if you support it maybe the same thing. Now is the time to express an opinion on it.

JOSEPH DiNUNNO: I'll make a comment, or I dare make a comment. We were admonished this evening to make sure that we look at our role up here, and I took that seriously. I thought that was a very, very important comment.

So I asked myself the question what is our role and what is my role, and I think I have two roles. The most important one I think is to review the views that we've heard and the expression of the community because that's our fundamental thing. That's one thing.

And the second, I owe it to them to also give them my views. So there are two parts. I'm reacting to what I hear, but I have to react from a technical standpoint. That's the basis from which I come. So I have to be honest with myself and them, too.

So I think we have to go forward to the NRC with something which maybe isn't an endorsement totally and wholeheartedly of everybody involved in this process of this option which has been given, but I think we have to lay it out the way it is.

The way I see it is that from the public testimony that we have received I'm having trouble sorting out, because I heard different things. I heard keep it on site and don't do anything with it and ship it off site. So I don't see any consensus from what I hear out there, and I'm not sure how I would represent the public view.

So I would have to say that there is no consensus that I heard out there of any one option that is totally acceptable as far as I can see. There are some strong opinions as expressed in a variety of ways.

So I don't really know how to characterize that other than a diversity of opinions and a variety of opinions.

On the technical side of the thing I would honestly have to say I see no technical reasons, even hearing the arguments this evening which were quite adverse in some ways, but balancing that against what is in the impact statement and the other more positive statements that have come in

from other authorities in this field, I would have to say technically I see no reason for objecting to this particular option. So there are two things, a public view which we have to represent, and my own position is that technically I see no basis for objecting to this alternative as being an unsafe thing.

ARTHUR MORRIS: Any other panel member who would like to speak at this time on the motion?

Joel.

JOEL ROTH: I basically will disagree with my panel member to my right. I think overwhelmingly we heard, with the exception I think of one person who said they want to keep it on site, or at least that is what I was hearing. I think that was a pretty good assessment in fact. At the last meeting I was asked to compile some of the reflections of what we had heard, and I thought that the three organizations, SVA, TMIA and LEAF were pretty clear on being opposed to dumping into the river and evaporation. And again overwhelming, and overwhelmingly can mean 10 to 2 or whatever, but certainly I don't think it was 6 to 4 to remain in the tanks on the island until more studies were done and maybe more reasonable methods are determined. There is no rush to do it now. There was a large concern heard tonight about tritium. Again, a very strong distrust as I heard again tonight of GPU, a strong concern about the cumulative effects of radiation exposure and, lastly and certainly not least important, is the added stress to the residents of the area. I think that definitely must be considered at all costs, that the stress has to be considered regardless of whether an EIS can take that into consideration or not. Then, lastly, the one thing that really had me very concerned and a little angry, and I'm sorry Frank Standerfer left at about 5 after 6 tonight, in a February 26th meeting in Lancaster the Mayor here was talking about, and I'm quoting from the transcript, "You're saying that if you wait that long a period of time the potential is that you start running into tankage problems," talking about the water on the island, "and you'll need some replacements. Is that what I hear?" And Mr. Standerfer replied, "Certainly the maintenance activity which we would prefer not to have custody of." The prime person who caused it does not wish to have the responsibility, and that is just abhorrent to me and I just can't go any further at this point. I'm against it. (Applause)

ARTHUR MORRIS: For the record I should indicate that Mr. Standerfer did call me and indicate that he would have problems making the meeting this evening because of another engagement he had and that there would be other staff here to speak to the issue. He did let the Chair know. I just wanted you to know that. He was concerned that he couldn't make it.

FREDERICK RICE: He was here earlier.

ARTHUR MORRIS: Yes, but I'm just clearing up the air that he did mention it and called me and he was concerned that he would have to leave early and he told me that.
Tom.

THOMAS SMITHGALL: Whether or not we agree with the BEIR Report or whether or not we agree with the cancer statistics we've heard, I think what we really have at hand is more of a moral issue, a political issue and an emotional issue that is about as basic as we can get. Our families, our children, our quality of life, we've heard all the comments here tonight. I think it's time that we go beyond that expert testimony and heed some of the warnings and the cautions that we've heard here tonight. If we don't do that, I think we are remiss in what Joe has commented on as our responsibility to reflect the comments of the people here in South Central Pennsylvania and here in Harrisburg.
I think we should opt to prevent any further intentional releases to the environment either by dumping or by evaporation.
I think we heard in Lancaster that enough is enough and I think we have heard here tonight that enough is enough.
So I am against the evaporation process.

FREDERICK RICE: Or the dumping into the river.

THOMAS SMITHGALL: Or the dumping into the river.
(Applause)

ARTHUR MORRIS: Mr. Rice.

FREDERICK RICE: Since I made the negative recommendation, I would like to comment that I'm concerned about the 2 million 300 thousand people in Central Pennsylvania who have expressed an endured with the risk that seems very indefinite at this time. Therefore, I would support retaining it on the island until a deep site repository low-level waste site could be identified and the water solidified even now, and then shipped to this deep site repository somewhere in Pennsylvania or Maryland, somewhere in the east to keep the exposure of risk and accidents down.
(Applause)

ARTHUR MORRIS: Anybody else on the panel that would like to make a comment that hasn't at this point yet?
Tom, let's give everybody a change.

ELIZABETH MARSHALL: I think that I echo a lot of the comments that have been made by the panel. I would like to say that I think there are well intentioned people on both sides of this issue and are trying to resolve a problem with our technology in this century has brought to us. But we can't have faith in technology. We have had the accident at Three Mile Island, for example, and we have had a space shuttle explode. There have been many dramatic illustrations of the fallibility of technology.
So I would agree that to evaporate the water or to discharge it into the Susquehanna would not be the wise thing in the public's interest at this

time, and that some of the other alternatives that have been mentioned might present a better solution to this problem in the future.
So I would not be in favor of supporting evaporation.
(Applause)

ARTHUR MORRIS: Niel.

NIEL WALD: I've heard all the discussion. I'm on this panel as one of the more technical people rather than a local resident, and I think I'm in the same boat as Joe DiNunno is.
From a technical standpoint I do not see any convincing evidence that there is a hazard to health from radiation effect itself that will be of significance to the population.
On the other hand, I'm impressed by the degree of concern that has been shown by many of the people, some of whom represent not only themselves, but organizations.
To counterbalance this concern, and let me just for a moment go back to the krypton-85 situation where it was impossible to proceed with any cleanup without venting or getting rid of the krypton 85. The venting was the least costly in terms of radiation exposure compared to some of the alternatives.
A case was made, it seems to me satisfactorily, that the venting was therefore justified and a major educational effort went into explaining to the public, and I know I participated in explaining to my medical colleagues in this area, just what was going on and why.
I haven't heard a case being made for the need to go ahead with the disposal by evaporation. I see no technical reason why that might not be satisfactory. It's been done in other similar situations.
On the other hand, with the degree of public concern it seems to me that a case needs to be made to explain why this should be done at this time, and I really haven't heard that from the people who made the proposal.
On that basis and considering the health impacts from the standpoint of psychic stress which I know that the NRC is not allowed to consider by court decision, as a physician I am concerned about it.
I would therefore vote against the evaporation at this time.
(Applause)

ARTHUR MORRIS: John.

JOHN LEUTZELSCHWAB: I guess I'm the one person who is a technical person that lives right next to the power plant. Technically I see no difference in the options. I think I agree with all of the other technical people on the panel.
I guess as somebody who lives near the plant, the question is do we want to get rid of it right now and take care of it or let it hang around for a while and take care of it later. I'm sort of opposed to putting things off until later because it doesn't get any better other than the fact that the tritium will decrease of course over the years.
I'm not sure how I would vote on this. Maybe I'll abstain. I sort of favor getting it off the island. I think there is a need to do that.
Putting it off until later just puts the problem off until later, too.

The stress will continue. It's like pulling off a Band-Aid. You can pull it off quickly rather than over a long period of time. So I guess I'm on the fence.

ARTHUR MORRIS: Anne.

ANNE TRUNK: I'm going to go along with John. I'm kind of on the fence. I've been hearing people say take it off the island and keep it on the island. I would like to see it off the island. I've always said that, and I'll stick to that.

So I'm going to go along with John. I'm on the fence.

THOMAS SMITHGALL: Can I ask a question?

ARTHUR MORRIS: Well, I think --

THOMAS SMITHGALL: No!
(Laughter)

ARTHUR MORRIS: No, because I think it's appropriate for the panel members to offer comment directly without having to respond to questions at this point.

The chair is going to offer a comment. You're the only other person besides myself that hasn't. Do you choose not to?

THOMAS GERUSKY: Okay. Unless somebody would disagree with the Chair offering a comment, I will do that.

Normally the Chair does not necessarily make comments on a situation like this, but since it's been something we've all deliberated on so much and why we're here tonight, I think it's important that I do.

First, I don't think, although we've heard a lot of comments tonight on the national standards, I do not feel that this is a forum for us to discuss those aspects. They exist in law and there is not much this panel can do about them even though we've heard comments directed at them.

I think what Eric Epstein had to say about the public has not shown really necessarily, although he solicited comments, has not shown directly an awful lot of interest. There is a lot of apathy. I don't have any doubts about that. There is certainly in Lancaster.

I do not see the interest or the concern. I've heard it from people from Lancaster who have attended meetings and they've come to several of the meetings and they've spoken out very strongly, several people have. But generally there has not been in my community a comment or concern expressed to me.

I held a town meeting on Monday night and there was no comment at all on this issue, none whatsoever, with the issue coming up. Letters? No letter of any kind. If I've gotten one or two, I don't recall it. I have had a lot of calls from Francis Skolnick and I've talked to her back and forth, but there has not been a lot of public concern in the Lancaster area on this particular issue.

There has been comment made about the fact that the public or certain members of the public don't trust GPU to evaporate. My feeling on that is if they don't trust them to evaporate, then why do they trust them to manage the water on the island?

It does appear from listening to the public, and I sense that there was a fair amount consensus. There was a couple of people that said -- one person said you shouldn't do anything. You shouldn't hold it on the island and you shouldn't evaporate it and you shouldn't dump it. You shouldn't do anything, but don't put it in the atmosphere. That is just not practical. You've got to do something even if it's holding it on the island.

Another person at the last meeting indicated that they didn't want it held on the island, and tonight gave mixed reaction to it.

But besides those two people, I think generally what I've read from testimony is that it should be held on the island from the public I've heard.

My personal feeling is that's wrong, and I publicly state that. I don't think this problem is going to go away. It's always going to be that water in those tanks on that island, and if it's addressed ten years from now it's going to be the same question.

I don't believe that the public are going to come forward, the same members that are here tonight or similar members with similar points of view are going to come forward and endorse an option at that point either. That's my feeling. I could be wrong, but that's my honest feeling on it.

I just personally feel no reason why this panel should offer opposition to the evaporation process. I do not feel that we should and that's my opinion. I accept my responsibility as a public official. I've listened to the technical people and I've listened to the public, and I feel I need to make a statement this evening on the issue.

With that, everybody has had a chance to speak their piece on the panel and I personally feel it is time for us to vote.

The motion is to recommend to the NRC that they should not approve the evaporation option. That's what is before us. A yes vote is for that action. If you vote yes it means basically you don't evaporate. If you vote no it means you're opposed to that motion.

I'm going to really just make it easy and ask everybody to raise their hands that would vote yes on that motion now.

(Show of hands)

I see one, two, three, four, five hands on the motion.

Those people raise their hands that are opposed to that motion

(Show of hands)

One, two, three four hands and one abstention.

So the motion passes by four to one.

(Applause)

Beyond that, are there other comments that the panel members would like to offer?

(No response)

I asked if Joel Roth would give a sense of the concern of the public that was expressed at the last meeting and he indicated he feels his comments

that he offered here earlier on and maybe he could go through them and
--

THOMAS GERUSKY: I just don't understand what we do next now. I don't have a problem with saying no, but we have got to then say what we would recommend be done and we haven't done that.

ARTHUR MORRIS: Well, let's hear it.

THOMAS GERUSKY: I just don't think that we ought to just forget about it and go down to Washington and say no and not come up with ---

ARTHUR MORRIS: I'm not suggesting that. I said that we have to now determine what other comments we would like to make, and if one of them is offer other suggestions, then that is what the panel should feel free to do. It's pretty clear to me at this point, and maybe we can take a vote on it, and maybe somebody wanted to offer a comment that the water should be held on the island because that is one of the things I sense from at least most of the people that voted for this option that at least at this time the water should be held on the island. If that's what you're looking for, I think maybe that kind of motion would be in order to say that it shouldn't be evaporated and for the time being until a future time, whatever the person might want to suggest, it should be held in the tanks. I think that's the direction.

THOMAS GERUSKY: Yes, it is.

NIEL WALD: That would be the way it is now, right?

ARTHUR MORRIS: Well, no. I mean all we've said is that we oppose evaporation. We have not said anything about what they should do with it. Now we can choose to sit back and do nothing or we can choose to offer a comment on what they should do with it.

NIEL WALD: I tried to explain the basis for my vote which is at the time the case has not been made convincingly for taking the action of evaporation now, and I'm glad you added at this time in one of your rephrasings of this. I think that is something that we can reflect by an obviously split vote, but that is the option to maintain the status quo until there is a further basis for consideration of any of these options or a better one.

ARTHUR MORRIS: I think to reflect that though it must be put in the form of a motion and must be carried. I don't think we can interpret the previous action to indicate that it's a status quo option. It is an opposition of the alternative recommended. I sense what you're saying is right, but I think we've got to vote on that. So if you want to put it forward, you make the motion that the sense of the panel is you're saying to maintain the status quo until --

NIEL WALD: Until a stronger case is made for taking the proposed action at this time or until there is a more desirable alternative.

ARTHUR MORRIS: What I have down here is to maintain the status quo until a stronger case can be made for a more desirable alternative.

NIEL WALD: For the proposed option or a more desirable alternative.

ARTHUR MORRIS: To maintain the status quo or a different option to that is how I read it, and the option can be anything including the evaporation.

NIEL WALD: Including the evaporation. That's what I meant to include, yes.

THOMAS GERUSKY: I'll second that.

ARTHUR MORRIS: It's been move and seconded that we maintain the status quo until a stronger case can be made for a more desirable alternative, and more desirable again could include evaporation.

NEIL WALD: You had better specify that because when you say more desirable it seems to be ruling out evaporation which I don't mean to do.

ELIZABETH MARSHALL: I think that Niel said for evaporation or a more desirable alternative.

ARTHUR MORRIS: How about if we say if a case can be made for a more desirable alternative including evaporation?

NIEL WALD: I don't think that says it.

ARTHUR MORRIS: Okay. Rephrase it. Say it.

NIEL WALD: Until a stronger case can be made for evaporation or a more desirable alternative.

ELIZABETH MARSHALL: I think you should be the word "either" in there, either evaporation or a more desirable alternative.

THOMAS SMITHGALL: Why don't you read what we just voted on. We voted on it, didn't we?

ARTHUR MORRIS: There was a motion made, and the motion that was made was to oppose the evaporation option. That is what I wrote down and read several times.

THOMAS SMITHGALL: And how we're putting it back in in another option.

ARTHUR MORRIS: Well, no, no. The motion before us now that has been moved by Niel and seconded by Tom Gerusky with a friendly amendment, as I understand it, is to maintain the status quo, this is the motion, until a

stronger case can be made for evaporation or a more desirable alternative. That's what it is. The key part of the motion is to maintain the status quo. There is a condition on that however.

NIEL WALD: If the sense of the previous motion was forever ban evaporation, I would have to withdraw my vote because I didn't mean that. I meant now, evaporation now I voted against. I think that was the sense of the motion really and not forever.

MICHAEL MASNIK: Could you also say to make a stronger case to take action? Is that a fair characterization?

NIEL WALD: That's what I'm trying to convey, yes.

MICHAEL MASNIK: And then may be you could drop that whole last part of it.

ARTHUR MORRIS: Wait a minute. Let me understand what you're saying here. We only really want input other than the panel just for clarification. So if this is a clarification question, go ahead.
It's maintain the status quo until a stronger case can be made --

MICHAEL MASNIK: To take action.

ARTHUR MORRIS: Until a stronger case can be made for evaporation is how it reads.
Now if Niel wants to amend that, and I'm not sure I really --

NIEL WALD: For evaporation or --

ARTHUR MORRIS: Until a stronger case can be made for evaporation or a more desirable alternative is what the wording is.

NIEL WALD: I would be willing to modify a desirable case to take action including --

ARTHUR MORRIS: Go slowly. Until a stronger case can be made is what I have. If you change that to something else, go ahead. Go slowly.

NIEL WALD: I'm having trouble because it's in the air instead of in front of me. A strong case can be made for I would say definitive action including -- then go on with the evaporation or a more --

ARTHUR MORRIS: Okay. Maintain the status quo until a stronger case can be made for definitive action, including evaporation or a more desirable alternative?

NIEL WALD: Yes.

ARTHUR MORRIS: It has been moved and seconded in a very friendly way that the motion, and unless one of the two motioners would disagree, then we would debate that, but they don't, and this is what they've said at this point.

Maintain the status quo until a stronger case can be made for definitive action, including evaporation or a more desirable alternative.

JOSEPH DiNUNNO: May I make a comment?

ARTHUR MORRIS: Certainly.

JOSEPH DiNUNNO: It sounds more confusing than it has to be. I was under the impression that what you're trying to say is there was no case made for doing anything at this stage of the game.

NIEL WALD: Well, the only proposal for which a case was being made was evaporation. You have to get really this far at this stage in the game.

JOSEPH DiNUNNO: Yes, but you're saying we don't need to make a decision. Nobody has really made a case that well, it's more than that. It's also that we have an ideal method now. If we have an ideal method now, then the case for going ahead would be a lot easier. So it's a combination of both the timing and the methodology. So I think this motion does state it, and maybe our discussion will clarify it for anyone who is confused.

THOMAS GERUSKY: I am concerned about an indefinite postponement of a decision. I mean I just don't know. I don't want that water on the island for 35 or 40 years and have to worry about it for that long.

NIEL WALD: This gives GPU the option of coming back with a better proposal or better justification for moving it.

THOMAS SMITHGALL: I voted against the first proposal on evaporation because I didn't want evaporation. Now you're going to ask me to put evaporation back in again. I can't support that. That's what you're asking me to do.

My vote on evaporation was based on the fact that I didn't want any environmental releases in this area, including evaporation. You're asking me now to make a better case for it and then I'll vote for it. My confusion is that you're asking for status quo, but then you're asking me to vote for evaporation.

NIEL WALD: I'm asking you to consider the case for moving ahead and then the best option if there is enough justification to move ahead. If the conclusion were that the stainless steel tanks will self-destruct and melt in five years and evaporation is the best way to get rid of the water with the other option being to release it as it is, 2 million gallons into the environment, you might want to consider evaporation. I can't close out the possibility if the justification is there. I think the point that I'm trying to make is that right now I don't think the justification is there to outweigh the concerns. I think the justification has to be there, but I don't want to close out any option when the justification is sufficient. I can't be absolute about saying this one --

ARTHUR MORRIS: It's okay to debate your feelings, but unless you suggest an amendment to delete something, we're really not going to move forward on it.

THOMAS SMITHGALL: I make an amendment to delete evaporation from the proposal.

ARTHUR MORRIS: Okay. So the wording would say until a stronger case can be made for definitive action on a more desirable alternative is what you would suggest it would say.
Do we have a second to that motion?

JOHN LEUTZELSCHWAB: I'll second that.

ARTHUR MORRIS: Could we move very quickly to a vote on this, please.

If you object, please let me know.

There is an original motion that reads, and I will take the time to read the original and what this one is.

Maintain the status quo until a stronger case can be made for definitive action, including evaporation or a more desirable alternative.

If you would vote for the amendment you would be voting to eliminate the wording of the evaporation such that it would then read:

Maintain the status quo until a stronger case can be made for definitive action on a more desirable alternative.

If you vote yes to that, you are deleting any reference to evaporation.

Even if you vote yes and it passes, we still have to vote on the main motion then without evaporation in it. Understand that.

All those in favor of the motion to delete the word "evaporation" basically is what we're saying, please say Aye.

(Chorus of Ayes)

ARTHUR MORRIS: I hear two very weak Ayes.

(The word Aye emphasized)

Thank you.

(Laughter)

All those opposed to the motion please say No.

(Chorus of Noes)

Okay. The Noes have it and evaporation is still in the motion.

Now we have before us the main motion and may we vote on this main motion at this point.

All those in favor of the motion, and I'm going to take the time to read it so nobody can say they misunderstood it.

Maintain the status quo until a stronger case can be made for definitive action including evaporation or a more desirable alternative.

All those in favor of that motion please say Aye.

(Chorus of Ayes)

All those opposed say No.

(Chorus of Noes)

Again, the Ayes have it.

FROM THE FLOOR: We want to see their hands.

ARTHUR MORRIS: You want to see their hands? Okay, we'll do it.

All those in favor of the motion please signify by raising your right hand.

(Show of hands)

Five people are in favor of that motion.

Those that are opposed to the motion, please raise your hands.

(Show of hands)

Four people are opposed to the motion.

It's five to four.

FROM THE FLOOR: How about the Chair.

ARTHUR MORRIS: You want the Chair to vote? The Chair doesn't have to vote, but the Chair can vote on this. Let me just think about this for a second.

(Laughter)

I was thinking I wasn't going to need to.

If I have to vote, I will vote No on the motion, and I know this probably goofs things up, and the reason for voting -- I'm going to vote No. That's my vote. I shouldn't give a reason.

Well, if somebody wants to object to my -- I voted as I did in the previous one, and if somebody wants to make a technical complaint on that, fine, but with the Chair voting it's five to five, which I think I have the choice to do when it's a deciding vote, which in this case it was.

The motion is defeated by five to five. So we do not have a motion before us.

I voted no quite frankly because you say maintain the status quo. I said in my statement that I cannot support that. Personally I just can't. I think it's wrong.

FREDERICK RICE: Can we use the word "any option" rather than --

ARTHUR MORRIS: Well, realize, the wording that Tom Smithgall attempted to put in here was that specific thing, a more desirable alternative. It did not rule out in my mind evaporation. It might have in his. Niel wanted it to be clear that evaporation was still an option because he felt that he didn't want to send the wrong message I think. So he wanted to leave it in as an option.

Right now we don't have anything unless somebody wants to make a motion.

THOMAS SMITHGALL: The amendment that was defeated eliminating the word "evaporation" has to be taken in the context of what this woman is putting down on tape and is going to come in our transcript when we voted about the evaporation issue at the outset.

We all have different reasons for not supporting the evaporation proposal, but it seems inconsistent to say no, I'm not favoring evaporation, but then say you want to put it back in in another vote. I can't support it that way.

ARTHUR MORRIS: From your standpoint I understand that clearly, and I understand what Niel is saying, too. Niel is indicating that his vote against evaporation earlier was not ultimately against it but against it at this time because he feels that more information needs to be available. So he wanted to include that in a motion that gave that message and the motion lost. So he wasn't successful in that.

ELIZABETH MARSHALL: If members of the Commission read the transcript, the whole transcript of this meeting, including the comments that were made that were brought to our meeting, they will hear some of the scientists who gave their opinion felt about evaporation.

It seems to me that if they can counter some of those arguments and make a better case for it that would convince people in this area, that perhaps it could be brought up again.

I'm not saying that it should be ruled out forever because certainly there are hazards involved with almost anything you do with it. It is a genie in a bottle.

ARTHUR MORRIS: Well, Elizabeth, if somebody can put that in the form of a motion, too. I feel that we should not as a panel expect the Commissioners to read the whole transcript or we are not passing along to them the reflection of the public in ourselves. That is why I think people here have attempted to give at least some direction other than no to evaporation.

ELIZABETH MARSHALL: We have heard from some objective scientists, and as far as I know they are objective and not subjective, and they are well established people. So I don't think that we should turn a deaf ear to them. Technology does make mistakes. Then years from now we may find that the evaporation of this water has had a bad effect in spite of what evidence there may be in the environmental impact statement.

I think that we have a right to reflect the genuine concerns that our citizens have and that we have because we have heard you might say another side of the aisle.

The NRC depends a lot for their information on the licensee, and the licensee does have a conflict of interest. I guess perhaps that's why we're here because we are a cushion between the conflict of interest and the public.

ARTHUR MORRIS: Does any member of the panel want to offer any comment on the longevity of the storage on the island?

I'm not talking about in years, but is there an interest on the panel to reflect any kind of opinion on whether this should be long-term storage as water on the island or not?

Is there a sense of the panel on that?

ELIZABETH MARSHALL: I think the panel might urge the NRC to consider appropriate action in the near future as to what alternative options might be wise. And maybe we shouldn't say alternative options, but we should say to make a better case for evaporation or to suggest the next desirable option.

ARTHUR MORRIS: But, Elizabeth, we just did that. I mean basically we said to them 'if it would have passed and it was defeated, that they've got to make a better case for evaporation or some other more desirable alternative. That's really what the message was and it was defeated. I guess what I'm looking at is since that lost, there has been some sense expressed by individuals that voted for the original motion to deny the evaporation option at this time, that they were concerned about the status quo forever. I mean I think I've heard that, and all I'm saying is there a sense of this panel to make some kind of comment to the NRC as to whether we feel that there is a problem for the water to remain indefinitely on the island or is that a concern or is it not a concern? I think we need to give some sense.

ELIZABETH MARSHALL: It's definitely a concern and perhaps our motion should state that.

ARTHUR MORRIS: Well then somebody should put that in the form a motion if that's the feeling of the panel and we'll decide whether it's something we want to recommend or not. Again, I've sensed as Chair that there is a concern on the indefinite storage of water on the island.

ELIZABETH MARSHALL: Well, perhaps we should have a motion that would say it is the concern of the panel that the water not be stored on the island, and that -- for a lengthy --

ARTHUR MORRIS: How about indefinite period?

ELIZABETH MARSHALL: For an indefinite period, and that other alternatives, or other options be considered or that a new -- what was it, a stronger case for evaporation be presented.

ARTHUR MORRIS: Elizabeth, we voted a very similar motion down. If you want to make that motion, fine, but I'm hearing --

ELIZABETH MARSHALL: You're concerned about the time limits. We were not emphasizing that, how long it was there.

ARTHUR MORRIS: But the concern of the panel that it not be stored on the island indefinitely could be an action. You don't necessarily have to say -- I mean obviously implied in that is that you've got to come up with another option. I don't know that you have to go further than that unless you want to. If you are suggesting that more options be considered, that's fine, too, whatever you want. I just sense that if you add onto that evaporation action you're going to be back to five to five.

ELIZABETH MARSHALL: Then you're not for making any recommendations but just making a statement.

ARTHUR MORRIS: This panel has said they don't want to touch evaporation at this point. That's basically what I've heard then saying, they don't want to include it in a motion. Whether you like it or not, they have said that, or at least five to five they said it.
I think a motion with evaporation in it is doomed to fail, and I'm suggesting in order to make progress that we might want to have the panel express that the water not be stored indefinitely, and I think that's the sense of it.

ELIZABETH MARSHALL: That's all right. I make that motion.

ARTHUR MORRIS: The question is do we have a second to the motion.

ELIZABETH MARSHALL: The concern of the panel that the water --

ARTHUR MORRIS: The concern of the panel that the water not be stored on the island indefinitely.

WILLIAM TRAVERS: What's indefinite? I'm sorry. When this panel started it was only supported to be on the island for five years.

ARTHUR MORRIS: Indefinitely means they should not just assume that that is a long-term solution is storage on the island. The sense of the panel is that is not the solution if that is what you vote for here.
Now somebody would say well, what is the length of time. I think to get into a debate on that again is going to be a problem and you're going to talk two years, five years, ten years. I just think that's a problem for the panel to come to grips with.

ELIZABETH MARSHALL: Could we say a timely solution?

ARTHUR MORRIS: Well, we get back to what is the time.
John.

JOHN LEUTZELSCHWAB: I think we're looking for a sense and not for any directions. The NRC is just going to say well, what do you feel. So I think this "indefinitely" would at least give them something to work with.

ELIZABETH MARSHALL: Yes.

JOSEPH DiNUNNO: I think you have given them that. You have a five to five vote on a proposition before and that gives them a sense, and this I think reflects the feeling out there and it reflects a counter feeling and I don't think you're going to get much further than that.
I don't think you're going to get any unanimous opinion on much of anything beyond that point other than the fact that there has to be a solution, and it's a matter of whether you make it now or you make it later. That's what we're really talking about, and putting it off doesn't do -- if I could see sitting here that there were any alternatives that have not been examined and looked like they would come down the pike in two years, I would be right with you, but I don't.

I think they have done an exhaustive look at alternatives, and I can't see them coming up with anything within two years that is going to add very much to this.

ARTHUR MORRIS: But I do feel, Joe, a sense from the panel that this is not a permanent solution. In fact, the concern of the panel that the water not be stored on the island indefinitely is a sense that I feel is important to offer if we have such a sense.
Tom.

THOMAS GERUSKY: GPU could submit a proposed change to their tech specs to allow release of the water to the river, and we haven't done anything about that issue. They could go right on and release the water to the river. What we have done is prevented them from doing maybe a better option. I just don't think that that vote, the vote that we took against one option is going to solve this problem, and that's what I'm concerned with.

I think we should have looked at the total picture. I don't think you want it released to the river either. You should have said that in the motion if that's what you wanted.

(Applause)

What you did is probably authorize them to dispose of it in the river, and I'm opposed to that. I just don't think that is a good sense.

ARTHUR MORRIS: I voted against the motion. So if you're looking at me when you say that, it was not my motion. I voted against both of them, and I agree with you. That is a considerable concern of mine, and I've mentioned that to the members of the public and to members of this panel on more than on occasion.

ELIZABETH MARSHALL: It was my understanding though that we were voting against their proposal to evaporate.

ARTHUR MORRIS: That's right.

ELIZABETH MARSHALL: That's what they proposed.

ARTHUR MORRIS: We supported the EIS, first of all, accepted it. We said it's acceptable. Then we said the evaporation was not acceptable. And then we defeated a motion to maintain the status quo, et cetera. We defeated that.

So really at this point there has been no word to the dumping of the water into the river.

THOMAS SMITHGALL: Do you want a sense of that?
(Laughter)

ARTHUR MORRIS: Well, you know, does this panel want to give a sense of that? If so, then you had better give a motion.

FREDERICK RICE: I thought that was included --

ARTHUR MORRIS: It was not included. If you see the record, it was read 18 times and it was not included.

NIEL WALD: The motion that failed would have precluded action without a better justification, and that also implies that it's not long-term, indefinite future status quo on the island.

ARTHUR MORRIS: To me when you say maintain that status quo until a stronger case -- status quo to me is the governing item, and that's why I voted against it.

If you would have said as part of that something about storage on the island indefinitely is not the solution, but that we would maintain the status quo until a stronger and so on, then I would have voted for that and it would have passed six to four. That would have sold me enough or at least the statement was being made that we shouldn't store it on island permanently.

ELIZABETH MARSHALL: Can't we come up with on motion that's going to cover all of this?

ARTHUR MORRIS: Well, I think that is what Niel is attempting to do, and what he's doing, if I could be clear, is moving the sense of the concern of the panel that the water not be stored on the island indefinitely period, maintain the status quo until a stronger case can be made for definitive action, including evaporation, or a more desirable alternative. That was what I think you were suggesting now as a motion. Do we have a second to that?

THOMAS GERUSKY: I don't know what you said?

ARTHUR MORRIS: Pardon?

THOMAS GERUSKY: I don't know what you said. I mean I've heard so many words misused tonight in discussions on individual motions, that I would like to make a motion that we adjourn.
(Laughter)

ARTHUR MORRIS: You just said that you were concerned that we haven't spoke to the water dumping issue, and now you sit here and say you want to adjourn.

THOMAS GERUSKY: I know, but I don't think we're going to do that. I just can't see us doing that properly, and I don't think any more votes are going to solve that problem, except a vote to adjourn.

FRANK STANDERFER: I wonder if it would help the panel for me to explain --

ARTHUR MORRIS: Come up to the mike, Frank. Frank, I only want one or two minutes, please.

FRANK STANDERFER: It won't take very long.

ARTHUR MORRIS: That's all we want.

FRANK STANDERFER: The panel has been struggling over this for three months, and we struggled over it for three months last spring. This started in January of last year when the Commission asked us to make a recommendation.

So in being responsive to their request we -- by July -- we said that we could make a recommendation by July.

We looked at the options and found four practical options, to store it on the island, put it in the river, make a big block of concrete out of it and store it on the island or evaporate it.

Then we sort through those this way. We decided that we would not recommend to put it in the river. It was clearly an unacceptable option to the people in this area.

Then we decided that we wanted to dispose of wastes from the island when they were available for disposal and we didn't want to store that water on the island.

That left either a big block of concrete on the island or evaporation and we decided that we did not want to make the island into a low-level waste dump, and that left us with one option, which was the evaporation option. All of the options comply with regulatory requirements at the present time. So possibly the panel could take a position on some of the issues, such as river disposal and whether it should be stored on the island. That is how we sorted through it.

ARTHUR MORRIS: Thank you.

ELIZABETH MARSHALL: Mr. Standerfer, why did consider making one great, huge concrete block rather than a whole lot of smaller ones that might be moved?

FRANK STANDERFER: You can make small ones or big ones. That's all the same option. That would be the solidification and storing the material on the island, and we decided that we should not create a low-level waste storage dump on the island.

ELIZABETH MARSHALL: Right, but if you had it say in smaller blocks of concrete, could it not then be moved to the low-level disposal site that we're eventually going to have?

FRANK STANDERFER: Yes, and the price is \$35 million and we did not believe that that was economically viable. It will take up a lot of space in the state's dump and I don't think they would want to waste that space on material which is de minimus in radioactive content.

ARTHUR MORRIS: Frank, thank you.

I think at this time truly, and while I indicated before and I think I'm complicating things by indicating a willingness to change my vote, the fact is when a letter goes into the NRC it's going to indicate that this panel by a five-four-one vote voted to oppose the evaporation. I'm going

to indicate that by a five to five vote no recommendation was made on that wording that I will not read again.

(Laughter)

That's where things stand at this point, and I'm not going to push or suggest that we get into storing indefinitely if the panel doesn't have a sense.

My biggest concern at this point is I personally do not want to leave without giving a sense on the dumping of the water issue into the river, and I would ask that we at least close that loop because I think -- I hadn't pushed for us to do that because I thought it was clear, but maybe we want to make it perfectly clear.

I would ask that somebody make that motion at least to clear that point up.

FREDERICK RICE: I so move.

THOMAS SMITHGALL: Second.

ARTHUR MORRIS: It's been moved and seconded that the panel express opposition to the dumping of the water option into the river.

All those in favor of that motion signify by saying Aye.

(Chorus of Ayes)

Is there anybody opposed to the motion?

(No response)

So it's unanimous.

Is there any other motion that anybody would like to make, or any other comments you feel we should be making in general and you would like the Chair to express without being formal about it in a letter to the NRC?

Should I be at liberty to express some of the public concerns that we've heard at the meeting?

JOSEPH DiNUNNO: Sure.

ARTHUR MORRIS: Okay. I will do that.

Other than that, I feel that we really have concluded action tonight on the purpose for the meeting.

[Discussion and adjourned]

APPENDIX B

CONTRIBUTORS TO THE SUPPLEMENT

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The overall responsibility for the preparation of this supplement was assigned to the Three Mile Island Project Directorate of the Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. The statement was prepared by members of the TMI Directorate with substantial assistance from other NRC components and the Pacific Northwest Laboratory. The major contributors to the draft supplement, their affiliations, and function or expertise are listed below.

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(a) The Pacific Northwest Laboratory is operated for the U.S. Department of Energy by the Battelle Memorial Institute.

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APPENDIX C

CALCULATION OF RADIATION DOSES

FROM WATERBORNE AND AIRBORNE PATHWAYS

APPENDIX C

CALCULATION OF RADIATION DOSES

FROM WATERBORNE AND AIRBORNE PATHWAYS

This appendix contains the methodologies, assumptions, and parameters used in the calculation of the radiation exposure to the public. The pathways are organized into three groups: waterborne pathways from the TMI site, airborne pathways from the TMI Site, and airborne pathways from the NTS.

C.1 WATERBORNE PATHWAYS

The public radiation doses resulting from the release of accident-generated water to the Susquehanna River were generated by the NRC's LADTAP II computer code (Streng, Peloquin and Whelan 1986). The LADTAP II generates 50-year dose commitments based on one year of ingestion. For the alternatives where ingestion occurs for a period of longer than one year, it was conservatively assumed that all the material ingested during the entire period of exposure was ingested in one year. Doses were determined for the maximum individual and for the population within a 50-mile (80-kilometer) radius of the power plant.

The pathways considered for doses to the maximally exposed individual and the population were consumption of drinking water and fish from the river, rivershore activities, and boating and swimming in the river. The irrigated farm product/food pathway was not applied to the dose calculations.

The affected population within the 50-mile (80-kilometer) radius numbered 2.2 million people with age group distributions as follows: 71% adults, 11% teenagers, and 18% children. Only 300,000 of the 2.2 million people were assumed to have obtained their drinking water from the river.

Table C.1 contains the consumption and usage rates by the maximum individual for the various pathways. Table C.2 lists the consumption rates for drinking water and river fish used for the population dose calculations. Additional parameters used for the population doses are as follows:

- shoreline usage - 83,000 person-h/yr
- swimming - 120,000 person-h/yr
- boating - 520,000 person-h/yr
- sport fishing (edible) yield - 308,000 lb/yr (68,000 kg/yr)
- commercial fishing yield - none assumed.

The flow rate of the river was assumed to be 34,000 cfs (963 m³/sec) for all except one of the calculations. The exception was the calculation of dose to the maximally exposed individual from the consumption of fish. For this calculation, a 3,150 cfs (89 m³/sec) flow rate was used. Since the flow rates

TABLE C.1. Consumption and Usage for the Maximum Individual

<u>Pathway</u>	<u>Target</u>	<u>Rate</u>	
Fish	Infant	0 lb/yr	(0 kg/yr)
	Child	15 lb/yr	(6.9 kg/yr)
	Teenager	35 lb/yr	(16 kg/yr)
	Adult	46 lb/yr	(21 kg/yr)
Drinking Water	Infant	87 gal/yr	(330 L/yr)
	Child	140 gal/yr	(510 L/yr)
	Teenager	140 gal/yr	(510 L/yr)
	Adult	190 gal/yr	(710 L/yr)
Shoreline Use	Infant	0 h/yr	
	Child	14 h/yr	
	Teenager	67 h/yr	
	Adult	12 h/yr	
Boating	All	0 h/yr	
Swimming	All	0 h/yr	

TABLE C.2. Consumption Rates for Population Doses

<u>Pathway</u>	<u>Target</u>	<u>Rate</u>	
Fish	Child	4.8 lb/yr	(2.2 kg/yr)
	Teenager	12 lb/yr	(5.2 kg/yr)
	Adult	15 lb/yr	(6.9 kg/yr)
Drinking Water	Child	69 gal/yr	(260 L/yr)
	Teenager	69 gal/yr	(260 L/yr)
	Adult	98 gal/yr	(370 L/yr)

of the river were so much larger than the discharge rates, the blowdown dilution had no observable effects on the final doses. The transport time from the plant discharge point to the various targets was neglected during the dose calculations.

In addition to the doses discussed above, doses to the population that consumes shellfish harvested from Chesapeake Bay were also calculated. The accident-generated water was diluted by the river flow of 34,000 cfs (963 m³/sec). Further dilution by the cooling tower blowdown and dilution in Chesapeake Bay was not considered. An annual shellfish harvest of 72 million pounds (33 million kilograms) was assumed. Assuming an edible fraction of 1/2, the total shellfish consumption would be 36 million pounds (16 million kilograms). The shellfish consumption rates for the average individual are listed in Table C.3, but the harvest was more than could be consumed by the

TABLE C.3. Average Shellfish Consumption Rates

<u>Target</u>	<u>Rate</u>
Child	0.73 lb/yr (0.33 kg/yr) (a)
Teenager	1.6 lb/yr (0.75 kg/yr) (a)
Adult	2.2 lb/yr (1.0 kg/yr) (a)
Maximum Adult	97 lb/yr (44 kg/yr) (b)

(a) NRC (1977).

(b) Rupp, Miller and Bates (1980).

population within 50 miles (80 kilometers) of the power plant. Therefore, the population dose from shellfish consumption is applied to the entire population consuming Chesapeake Bay shellfish.

C.2 AIRBORNE PATHWAYS AT THREE MILE ISLAND

The public radiation doses resulting from atmospheric releases from the TMI site due to treatment and disposal of accident-generated water have been calculated using the GASPARD II computer code (Streng, Bander and Soldat 1986). The GASPARD code generated 50-year dose commitments based on one year of inhalation or ingestion.

Doses were determined for the maximally exposed individual and for the 2.2 million people (age group distribution: 71% adults, 11% teenagers, and 18% children) living within a 50-mile (80-kilometer) radius of the power plant. The pathways considered for both the maximally exposed individual and the population doses were inhalation, consumption of agricultural products, and external exposure.

The following input parameters were incorporated into the computer runs. Consumption rates for individual members of the population are 434 lb/yr (197 kg/yr), 35 gal/yr (131 L/yr), and 179 lb/yr (81 kg/yr) for vegetables, milk, and meat, respectively. Total annual agricultural production for the 50-mile (80-kilometer) area surrounding the site is 1.2×10^8 lbs (5.32×10^7 kg), 1.4×10^8 gal (5.27×10^8 L), and 1.2×10^8 lbs (5.44×10^7 kg) for vegetables, milk, and beef, respectively.

Specific exposure pathways fractions used are:

- leafy vegetables from garden 0.5
- other edibles from garden 1.0
- fraction of time milk cows are on pasture 0.6
- fraction of time beef are on pasture 1.0
- fraction of time milk goats are on pasture 1.0
- milk cow intake from pasture 1.0
- beef intake from pasture 0.8
- milk goat intake from pasture 1.0

The population distributions were obtained from an internal NRC document by A. Sinisgalli, "1981 Residential Population Estimates 0-80 Kilometers For Nuclear Power Plants." The $\bar{\chi}/Q'$ values were obtained from Appendix W of the PEIS (NRC 1981). The $\bar{\chi}/Q'$ values for the maximally hypothetically exposed individual [assumed to be a child located at the site boundary full time, 0.34 miles (0.55 km) west of the site who consumes goat milk from that site] was 4×10^{-6} sec/m³ for the heated releases from the stack and 3×10^{-5} sec/m³ for the ground values. In addition, the absolute humidity for the site is 8.0 g/m³. No credit for enhanced dilution from building wakes was taken.

Exposure parameters for the calculations that are not specified above are contained in the GASPAR code.

C.3 AIRBORNE PATHWAYS AT THE NEVADA TESTING SITE

The tritium dose to persons living within 50 miles (80 kilometers) of the site of evaporation on the NTS was estimated using both site-specific information and generic parameter values. Site data,^(a) including the number of persons and locations, average wind speeds and their frequencies of occurrence in direction, were used in estimating atmospheric dilution factors at each population location following a method from the NCRP (1986). The inhalation dose from the tritium was then determined using an average inhalation rate of 2.81×10^5 ft³/yr (8000 m³/yr) and a total body inhalation dose conversion factor of 90 rem/Ci inhaled (Streng, Bander and Soldat 1986). The population dose from the tritium inhalation was then doubled to include any contribution from the possible ingestion of contaminated vegetables from gardens in the 50-mile (80-kilometer) region.

(a) Letter from S. Black (Environmental Monitoring Standard Laboratory, Las Vegas) dated November 5, 1986, to R. Harty, Pacific Northwest Laboratory. Subject: "Data for EPA AIRDOSE, NTS Wind Data-Yucca Flats." Available in NRC Public Document Room.

APPENDIX D

BASIS FOR TRANSPORTATION ACCIDENT AND
TRANSPORTATION COST ESTIMATES

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BASIS FOR TRANSPORTATION ACCIDENT AND

TRANSPORTATION COST ESTIMATES

Several of the alternatives for disposal of the accident-generated water involve offsite shipment of the product waste forms. Because of the extremely low radionuclide content of these wastes, no radiological consequences are expected to result from these shipments, including consequences from normal (or incident-free) transport as well as accidents. However, accidents could occur and therefore, nonradiological fatalities and injuries could also occur. The approach, bases, and results of estimating the number of fatalities and injuries for each of the alternatives that involves offsite truck shipments are described in this appendix. The bases and approach to estimating transportation costs are also described.

D.1 TRUCK ACCIDENT FATALITY AND INJURY ESTIMATES

The general approach to estimating the nonradiological impacts of accidents during offsite shipments is to multiply the number of vehicle-kilometers by a fatality (or injury) rate given in units of fatalities (or injuries) per kilometer. The number of vehicle kilometers for each alternative is the product of the number of shipments times the round-trip shipping distance. Accident fatality and injury data, as well as shipping distances, are available for travel in three population zones: rural, suburban, and urban (Cashwell et al. 1986). Therefore, the total fatalities (or injuries) over an entire shipping campaign is the sum of the products of the vehicle kilometers and fatality (or injury) rates in each zone. The basic accident fatality rates, injury rates, and shipping distances used in this study are presented in Table D.1. Only truck transportation is considered. The accident data in Cashwell et al. (1986) were taken from statistics compiled by the Department of Transportation (DOT 1985).

A final calculation was performed to estimate the number of accidents expected for each alternative. This estimate is based on the ratio of the total number of truck accidents in 1983 to the total number of injuries produced by these accidents (DOT 1985). This ratio is 1.18 accidents per injury. To estimate the total number of accidents for each alternative, this ratio is multiplied by the number of injuries that was estimated using the injury rates shown previously.

TABLE D.1. Basic Truck Transportation, Accident, and Mileage Data
(Cashwell et al. 1986)

	Shipment Destination	
	<u>Hanford</u>	<u>NTS</u>
One-Way Shipping Distance (km)		
Rural	3,370	3,330
Suburban	890	820
Urban	29	27
Fatalities/km		
Rural	6.8×10^{-8}	
Suburban	1.7×10^{-8}	
Urban	1.0×10^{-8}	
Injuries/km		
Rural	8.3×10^{-7}	
Suburban	3.9×10^{-7}	
Urban	3.8×10^{-7}	

D.2 TRANSPORTATION COST ESTIMATES

Because of the low radionuclide concentrations in the accident-generated water, it is assumed that all wastes would be classified as LLW and could be shipped as a "non-highway-route-controlled" quantity. Special provisions are required for the higher-activity "highway-route-controlled" quantity shipments that are not needed for the waste products considered in this study. This section describes the approach and bases used to estimate transportation costs and presents the results for each alternative that involves offsite shipments.

A relatively straightforward approach was used to estimate offsite transportation costs. Unit costs for non-highway-route-controlled LLW shipments by truck were taken from McNair et al. (1986). The unit costs for these shipments were given at \$1.90 per mile (\$1.18 per kilometer). This unit cost was multiplied by the total one-way vehicle-miles to estimate the transportation costs for each alternative. McNair et al. (1986) indicated that this rate should be multiplied by only the number of loaded vehicle-miles. The number of one-way vehicle-miles was calculated by multiplying the number of shipments by the one-way shipping distances from TMI to Hanford (2,680 miles or 4,313 kilometers) and from TMI to NTS (2,612 miles or 4,203 kilometers) given by Cashwell et al. (1986). The results of the transportation cost calculations for each alternative that involves offsite shipments are presented in Table D.2.

TABLE D.2. Summary of Transportation Cost Estimates for Alternatives Involving Offsite Shipments

<u>Alternative</u>	<u>Number of Shipments^(a)</u>	<u>Transportation Cost, \$ Millions</u>
Forced Evaporation, Solidification with Offsite Burial	80 (low) 135 (high)	0.41 0.69
Bulk Liquid Shipment	420	2.1
Onsite Solidification, Burial at Hanford	1,300 (low) 1,600 (high)	6.6 8.1
Shipment of Resin Liners After Retreat- ment of Accident- Generated Water	61	0.31

(a) In some cases, a range was given for the number of truck shipments.

NRC FORM 338 (2-84) NRCM 1102, 3201, 3202 BIBLIOGRAPHIC DATA SHEET SEE INSTRUCTIONS ON THE REVERSE		U.S. NUCLEAR REGULATORY COMMISSION 1. REPORT NUMBER (Assigned by TIDC, add Vol. No., if any) NUREG-0683 Supplement No. 2 Final Report	
2. TITLE AND SUBTITLE Programmatic Environmental Impact Statement related to decontamination and disposal of radioactive wastes resulting from March 28, 1979 accident at Three Mile Island Nuclear Station, Unit 2 <u>Final Supplement Dealing With Disposal of Accident-Generated Water</u>		3. LEAVE BLANK	
4. AUTHOR TMI Cleanup Project Directorate		4. DATE REPORT COMPLETED MONTH YEAR June 1987	
5. PERFORMING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code) Division of Reactor Projects-III/IV/V and Special Projects Office of Nuclear Reactor Regulation U.S. Nuclear Regulatory Commission Washington, DC 20555		6. DATE REPORT ISSUED MONTH YEAR June 1987	
7. SPONSORING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code) Same as 7, above.		8. PROJECT/TASK/WORK UNIT NUMBER 9. FIN OR GRANT NUMBER	
10. SUPPLEMENTARY NOTES		11a. TYPE OF REPORT Technical b. PERIOD COVERED (Inclusive dates)	
12. ABSTRACT (200 words or less) <p>In accordance with the National Environmental Policy Act, the Programmatic Environmental Impact Statement Related to Decontamination and Disposal of Radioactive Waste for the 1979 Accident at Three Mile Island Nuclear Station, Unit 2 (PEIS) has been supplemented. This supplement updates the environmental evaluation of accident-generated water disposal alternatives published in the PEIS, utilizing more complete and current information, and covering the licensee's proposal to dispose of the water by evaporation to the atmosphere.</p> <p>The staff concludes that this water can be disposed of without incurring significant environmental impact. The staff's evaluation of a number of disposal alternatives indicates that no alternative is clearly preferable to the others, and that the licensee's proposal method is satisfactory. The risks to the general public from exposure to radioactive effluents from any alternative have been quantitatively estimated and are very small fractions of the estimated normal incidence of cancer fatalities and genetic disorders. The most significant potential impact associated with any disposal alternative is the risk of physical injury associated with transportation accidents. Additionally, no significant impacts to aquatic or terrestrial biotic from any disposal alternative are expected.</p>			
14. DOCUMENT ANALYSIS - a. KEYWORDS/DESCRIPTORS TMI-2, accident-generated water, tritium strontium-90, cesium-137, iodine-129, carbon-14, evaporation, Susquehanna River, ion exchange, solidification, low-level waste, onsite disposal, alternatives		15. AVAILABILITY STATEMENT Unlimited	
b. IDENTIFIERS/OPEN-ENDED TERMS		16. SECURITY CLASSIFICATION (This page) Unclassified (This report) Unclassified	
		17. NUMBER OF PAGES	
		18. PRICE	